Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A communication system comprising:

(a) an automatic gain control (AGC) circuit which receives and adjusts the gain of a communication signal, the AGC circuit being controlled by a gain control signal; ~~and~~

(b) an insertion phase variation compensation module which continuously counteracts the effects of phase offsets introduced into the communication signal by the AGC circuit, based on the gain control signal;

(c) a look up table (LUT) electrically coupled to the insertion phase variation compensation module; and

(d) a modem electrically coupled to the AGC circuit and the LUT, wherein the modem receives complex in-phase (I) and quadrature (Q) signal components from the insertion phase variation compensation module, the modem outputs the gain control signal, based on the complex I and Q signal components, to the AGC circuit and the LUT, and the LUT provides estimates of the phase offsets to the insertion phase variation compensation module as a function of the gain control signal that the LUT receives from the modem.

2. (currently amended): The communication system of claim 1 further comprising:

(e) ~~(e)~~ a receiver which receives the communication signal from the AGC circuit and outputs analog I and Q ~~in-phase (I) and quadrature (Q)~~ signal components; and

(f) ~~(d)~~ an analog to digital converter (ADC) which receives and converts the analog I and Q signal components to digital I and Q signal components.

3. (currently amended): The communication system of claim 2 wherein the insertion phase variation compensation module receives the digital I and Q signal components from the ADC and outputs the complex ~~altered~~ I and Q signal components ~~having~~ which have different phase characteristics than the digital I and Q components~~, the communication system further comprising:~~

~~(c) a modem which receives the altered I and Q signal components, the modem including a processor which generates the gain control signal~~.

4. (currently amended): The communication system of claim 1 ~~claim 3~~ wherein the modem comprises a processor which calculates how much power is input to the ADC.

5. (original): The communication system of claim 2 wherein the insertion phase variation compensation module receives the digital I and Q components from the ADC and alters the phase characteristics of the digital I and Q components as a function of the gain control signal.

Claim 6 (canceled)

7. (currently amended): The communication system of claim 1 ~~claim 6~~ wherein the provided estimates of the phase offsets include a Sin function and a Cos function of a phase offset, x.

8. (currently amended): The communication system of claim 7 wherein the insertion phase variation compensation module has a real, Re, input associated with a digital in-phase (I) signal component and an imaginary, Im, input associated with a quadrature (Q) signal component and, based on the estimates of the phase offsets provided by the LUT, the insertion phase variation compensation module outputs an I signal component having a phase that is adjusted in accordance with the following function: (Cos(x) × Re) - (Sin(x) × Im).

9. (currently amended): The communication system of claim 7 wherein the insertion phase variation compensation module has a real input, Re, associated with a digital in-phase (I) signal component and an imaginary input, Im, associated with a quadrature (Q) signal component and, based on the estimates of the phase offsets provided by the LUT, the insertion phase variation compensation module outputs a Q signal component having a phase that is adjusted in accordance with the following function: (Sin(x) × Re) + (Cos(x) × Im).

10. (currently amended): A wireless transmit/receive unit (WTRU) comprising:

(a) an automatic gain control (AGC) circuit which receives and adjusts the gain of a communication signal, the AGC circuit being controlled by a gain control signal; ~~and~~

(b) an insertion phase variation compensation module which continuously counteracts the effects of phase offsets introduced into the communication signal by the AGC circuit, based on the gain control signal;

(c) a look up table (LUT) electrically coupled to the insertion phase variation compensation module; and

(d) a modem electrically coupled to the AGC circuit and the LUT, wherein the modem receives complex in-phase (I) and quadrature (Q) signal components from the insertion phase variation compensation module, the modem outputs the gain control signal, based on the complex I and Q signal components, to the AGC circuit and the LUT, and the LUT provides estimates of the phase offsets to the insertion phase variation compensation module as a function of the gain control signal that the LUT receives from the modem.

11. (currently amended): The WTRU of claim 10 further comprising:

(e) ~~(e)~~ a receiver which receives the communication signal from the AGC circuit and outputs analog I and Q ~~in-phase (I) and quadrature (Q)~~ signal components; and

(f) ~~(d)~~ an analog to digital converter (ADC) which receives and converts the analog I and Q signal components to digital I and Q signal components.

12. (currently amended): The WTRU of claim 11 wherein the insertion phase variation compensation module receives the digital I and Q signal components from the ADC and outputs the complex ~~altered~~ I and Q signal components ~~having~~ which have different phase characteristics than the digital I and Q components~~, the WTRU further comprising:~~

~~(c) a modem which receives the altered I and Q signal components, the modem including a processor which generates the gain control signal~~.

13. (currently amended): The WTRU of claim 10 ~~claim 12~~ wherein the modem comprises a processor which calculates how much power is input to the ADC.

14. (original): The WTRU of claim 11 wherein the insertion phase variation compensation module receives the digital I and Q components from the ADC and alters the phase characteristics of the digital I and Q components as a function of the gain control signal.

Claim 15 (canceled)

16. (currently amended): The WTRU of claim 10 ~~claim 15~~ wherein the provided estimates of the phase offsets include a Sin function and a Cos function of a phase offset, x.

17. (currently amended): The WTRU of claim 16 wherein the insertion phase variation compensation module has a real, Re, input associated with a digital in-phase (I) signal component and an imaginary, Im, input associated with a quadrature (Q) signal component and, based on the estimates of the phase offsets provided by the LUT, the insertion phase variation compensation module outputs an I signal component having a phase that is adjusted in accordance with the following function: $(\text{Cos}(x) \times \text{Re}) - (\text{Sin}(x) \times \text{Im})$.

18. (currently amended): The WTRU of claim 16 wherein the insertion phase variation compensation module has a real input, Re, associated with a digital in-phase (I) signal component and an imaginary input, Im, associated with a quadrature (Q) signal component and, based on the estimates of the phase offsets provided by the LUT, the insertion phase variation compensation module outputs a Q signal component having a phase that is adjusted in accordance with the following function: (Sin(x) × Re) + (Cos(x) × Im).

19. (currently amended): An integrated circuit (IC) comprising:

(a) an automatic gain control (AGC) circuit which receives and adjusts the gain of a communication signal, the AGC circuit being controlled by a gain control signal; ~~and~~

(b) an insertion phase variation compensation module which continuously counteracts the effects of phase offsets introduced into the communication signal by the AGC circuit, based on the gain control signal;

(c) a look up table (LUT) electrically coupled to the insertion phase variation compensation module; and

(d) a modem electrically coupled to the AGC circuit and the LUT, wherein the modem receives complex in-phase (I) and quadrature (Q) signal components from the insertion phase variation compensation module, the modem outputs the gain control signal, based on the complex I and Q signal components, to the AGC circuit and the LUT, and the LUT provides estimates of the phase offsets to the insertion phase variation compensation module as a function of the gain control signal that the LUT receives from the modem.

20. (currently amended): The IC of claim 19 further comprising:

(e) ~~(e)~~ a receiver which receives the communication signal from the AGC circuit and outputs analog I and Q ~~in-phase (I) and quadrature (Q)~~ signal components; and

(f) ~~(d)~~ an analog to digital converter (ADC) which receives and converts the analog I and Q signal components to digital I and Q signal components.

21. (currently amended): The IC of claim 20 wherein the insertion phase variation compensation module receives the digital I and Q signal components from the ADC and outputs the complex ~~altered~~ I and Q signal components ~~having~~ which have different phase characteristics than the digital I and Q components~~, the WTRU further comprising:~~

~~(e) a modem which receives the altered I and Q signal components, the modem including a processor which generates the gain control signal~~.

22. (currently amended): The IC of claim 19 ~~claim 21~~ wherein the modem comprises a processor which calculates how much power is input to the ADC.

23. (original): The IC of claim 20 wherein the insertion phase variation compensation module receives the digital I and Q components from the ADC and alters the phase characteristics of the digital I and Q components as a function of the gain control signal.

Claim 24 (canceled)

25. (currently amended): The IC of claim 19 ~~claim 24~~ wherein the provided estimates of the phase offsets include a Sin function and a Cos function of a phase offset, x.

26. (currently amended): The IC of claim 25 wherein the insertion phase variation compensation module has a real, Re, input associated with a digital in-phase (I) signal component and an imaginary, Im, input associated with a quadrature (Q) signal component and, based on the estimates of the phase offsets provided by the LUT, the insertion phase variation compensation module outputs an I signal component having a phase that is adjusted in accordance with the following function: (Cos(x) × Re) - (Sin(x) × Im).

27. (currently amended): The IC of claim 25 wherein the insertion phase variation compensation module has a real input, Re, associated with a digital in-phase (I) signal component and an imaginary input, Im, associated with a quadrature (Q) signal component and, based on the estimates of the phase offsets provided by the LUT, the insertion phase variation compensation module outputs a Q signal component having a phase that is adjusted in accordance with the following function: (Sin(x) × Re) + (Cos(x) × Im).

28. (currently amended): In a communication system including an automatic gain control (AGC) circuit, a modem, a look up table (LUT) and an insertion phase variation compensation module, a method of continuously counteracting the effects of phase offsets introduced into a communication signal by the AGC circuit, the method comprising:

(a) providing a gain control signal to the AGC circuit;

(b) the AGC circuit receiving and adjusting the gain of a communication signal in response to the gain control signal, the adjustment causing a phase offset to be introduced into the communication signal;

(c) providing an estimate of the phase offset to the insertion phase variation compensation module as a function of the gain control signal;

~~(d) the insertion phase variation compensation module adjusting the phase of the communication signal based on the provided estimate; and~~

(d) the modem receiving complex in-phase (I) and quadrature (Q) signal components from the insertion phase variation compensation module;

(e) the modem outputting the gain control signal to the AGC circuit and the LUT based on the complex I and Q signal components;

(f) the LUT providing an estimate of the phase offset to the insertion phase variation compensation module as a function of the gain control signal that the LUT receives from the modem to adjust the phase of the communication signal; and

(g) ~~(e)~~ repeating steps (a) - (f) ~~(d)~~.

29. (currently amended): The method of claim 28 wherein the provided estimate of the phase offset includes a Sin function and a Cos function of a phase offset, x.

30. (currently amended): The method of claim 29 wherein the insertion phase variation compensation module has a real, Re, input associated with a digital in-phase (I) signal component and an imaginary, Im, input associated with a quadrature (Q) signal component and, based on the estimate of the phase offset provided by the LUT, the insertion phase variation compensation module

outputs an I signal component having a phase that is adjusted in accordance with the following function: (Cos(x) × Re) - (Sin(x) × Im).

31. (currently amended): The method of claim 29 wherein the insertion phase variation compensation module has a real input, Re, associated with a digital in-phase (I) signal component and an imaginary input, Im, associated with a quadrature (Q) signal component and, based on the estimate of the phase offset provided by the LUT, the insertion phase variation compensation module outputs a Q signal component having a phase that is adjusted in accordance with the following function: (Sin(x) × Re) + (Cos(x) × Im).